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%% Section 5: Defining x, xp, y, yp
% Define the vector of states, x and xp
x = [k_cu c_bal a_cu d_cu];
xp = [k_cup c_balp a_cup d_cup];
% Define the vector of controls, y and yp
y = [c_cu iv_cu y_cu la_cu n_cu rk_cu w_cu];
yp = [c_cup iv_cup y_cup la_cup n_cup rk_cup w_cup];

% For the log-approximation
f = subs(f, [x,y,xp,yp], exp([x,y,xp,yp]));

% Phi: the expected value for the exogenous shocks, else use Phi =
[]
Phi = [RHOA*log(a_cu);RHOD*log(d_cu)];
% For the log-approximation
Phi = subs(Phi, [x,y,xp,yp], exp([x,y,xp,yp]));
```